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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/676,744	09/30/2003	Harold N. Rosenstock	IS01409MCG	7941

27572 7590 10/28/2008

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ART UNIT	PAPER NUMBER
2455	

MAIL DATE	DELIVERY MODE
10/28/2008	PAPER

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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/676,744
Filing Date: September 30, 2003
Appellant(s): ROSENSTOCK ET AL.

Joseph M. Lafata (37,166)
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 10/06/08 appealing from the Office action mailed 02/05/08.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The following are the related appeals, interferences, and judicial proceedings known to the examiner which may be related to, directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal:

10/676,746 - related application on appeal

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

6,941,350	FRAZIER	9-2005
6,519,660	ROONEY	2-2003

"InfininBand Architecture Specification Volume 1 Release 1.1" InfiniBand Trade Association, November 6, 2002, Pages 1-35, 54-57, 61-80, 89-90, 121-124, 628-632, 682-684, 706, 758-768, 826

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-3, 6-9, 11-13, 29-31, 34-37 and 39-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,941,350 by Frazier et al. (hereinafter Frazier) in view of InfiniBand Architecture Specification Volume 1 Release 1.1 published November 6, 2002 and provided through applicant's IDS submitted 09/30/2003 (hereinafter IBA Specification).

With respect to claims 1 and 29, Frazier teaches a method (and corresponding InfiniBand architecture node), comprising:

providing an subnet architecture having a plurality of nodes (Col. 3 lines 13-43, Col. 4 lines 3-11 and Col. 8 lines 32-44: SAN with plurality of nodes forming multiple subnets), wherein each of the plurality of nodes has a priority value and a globally unique identifier (Col. 9 lines 17-30 and Col. 10 lines 20-38: priorities and globally unique identification - GUID);

providing each of the plurality of nodes with a subnet manager (Col. 8 lines 38-44;

ranking each of the plurality of nodes according to the priority value and the globally unique identifier (Col. 10 lines 20-38: ranking can use both priority and guid); and

selecting if the subnet manager is included in a set of standby subnet managers based on the priority value and the globally unique identifier of each of the plurality of nodes (Col. 10 lines 20-38 and Col. 11 lines 49-64: selection can use both priority and guid).

Frazier does not explicitly disclose the subnet architecture is an Infiniband architecture subnet. IBA Specification describes the Infiniband architecture subnet as an interconnect technology for interconnecting processor nodes and I/O nodes to form a system area network (Page 54, section 1.2). Further, Infiniband architecture supports complexy system area networks consisting of multiple independent and clustered hosts and I/O components (Page 56, section 1.3).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to take the method disclosed by Frazier and modify it as indicated by IBA Specifiation such that the subnet architecture is an Infiniband architecture subnet. One would be motivated to have this as such an architecture would be beneficial to the system area network of Frazier (In Frazier: Col. 3 lines 13-43, Col. 4 lines 3-11 and Col. 8 lines 32-44) and (In IBA Specification page 55-56: 1.2.3 - 1.3).

Additionally, while Frazier teaches that there may be multiple subnet managers per subnet (Frazier: Col. 9 lines 51-65), Frazier does not explicitly disclose providing a subnet manager within each of the plurality of nodes of the subnet. However, it is implied by Frazier's suggestion of having multiple subnet managers that any number of subnet managers may be used, including one for each of the plurality of the nodes in the subnet. Frazier's invention specifically provides support for multiple subnet managers (Frazier: Col. 10 lines 20-58). Because Frazier suggests multiple subnet managers can be used and provides a support for multiple subnet managers, it would have been obvious to one skilled in the art to substitute any number of subnet managers for the subnet, including one for each of the plurality of nodes, for the predictable result of providing redundancy (See for example Col. 10 lines 7-19 of Frazier).

With respect to claims 2 and 30, Frazier teaches all the limitations of claims 1 and 29 respectively and further teaches wherein selecting comprises selecting if the subnet manager is included in the set of standby subnet managers up to a limit value (Col. 12 lines 9-19).

With respect to claims 3 and 31, Frazier teaches all the limitations of claims 1 and 29 respectively and further teaches wherein ranking each of the plurality of nodes comprises ranking each of the plurality of nodes from a highest priority value to a lowest priority value, and wherein if the priority value for a first node is identical to the priority value of a second node, further ranking the first node and the second node from a lowest globally unique identifier to a highest globally unique identifier (Col. 10 lines 20-38).

With respect to claims 6 and 34, Frazier teaches all the limitations of claims 1 and 29 respectively and further teaches wherein ranking each of the plurality of nodes comprises ranking each of the plurality of nodes from a lowest priority value to a highest priority value, and wherein if the priority value for a first node is identical to the priority value of a second node, further ranking the first node and the second node from a highest globally unique identifier to a lowest globally unique identifier (Col. 10 lines 20-38).

With respect to claims 7 and 35, Frazier teaches all the limitations of claims 6 and 34 respectively and further teaches wherein selecting comprises selecting the subnet manager to be included in the set of standby subnet managers by selecting the subnet manager from each of the plurality of nodes with a lowest set of priority values (Col. 10 lines 20-38).

With respect to claims 8 and 36, Frazier teaches all the limitations of claims 6 and 34 respectively and further teaches wherein selecting comprises selecting the subnet manager to be included in the set of standby subnet managers by selecting the

subnet manager from each of the plurality of nodes with a highest set of globally unique identifiers (Col. 10 lines 20-38).

With respect to claims 9 and 37, Frazier teaches all the limitations of claims 1 and 29 respectively and further teaches wherein ranking each of the plurality of nodes comprises ranking each of the plurality of nodes from a highest priority value to a lowest priority value, and wherein if the priority value for a first node is identical to the priority value of a second node, further ranking the first node and the second node from a highest globally unique identifier to a lowest, globally unique identifier (Col. 10 lines 20-38).

With respect to claims 11 and 39, Frazier teaches all the limitations of claim 9 and 37 respectively and further teaches wherein selecting comprises selecting the subnet manager to be included in the set of standby subnet managers by selecting the subnet manager from each of the plurality of nodes with a highest set of globally unique identifiers (Col. 10 lines 20-38).

With respect to claims 12 and 40, Frazier teaches all the limitations of claim 1 and 29 respectively and further teaches wherein ranking each of the plurality of nodes comprises ranking each of the plurality of nodes from a lowest priority value to a highest priority value, and wherein if the priority value for a first node is identical to the priority value of a second node, further ranking the first node and the second node from a lowest globally unique identifier to a highest globally unique identifier (Col. 10 lines 20-38).

With respect to claims 13 and 41, Frazier teaches all the limitations of claim 12 and 40 respectively and further teaches wherein selecting comprises selecting the subnet manager to be included in the set of standby subnet managers by selecting the subnet manager from each of the plurality of nodes with a lowest set of priority values (Col. 10 lines 20-38).

Claims 4, 5, 10, 14, 32, 33, 38 and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Frazier in view of IBA Specification as applied in claims 3, 9, 12, 31, 37 and 40 above and in further view of U.S. Patent 6,519,660 by Rooney (Rooney).

With respect to claims 4 and 10 and 32 and 38, Frazier teaches all the limitations of claims 3, 9, 31 and 37 respectively but does not explicitly teach wherein selecting comprises selecting the subnet manager to be included in the set of standby subnet managers by selecting the subnet manager from each of the plurality of nodes with a highest set of priority values as Frazier instead uses the lowest set of priority values (Col. 10 lines 20-38).

Rooney demonstrates how one can either use a highest to lowest or lowest to highest selection in a priority selection scheme, as it is essentially a matter of design choice (Col. 16 lines 31-49).

It would have been obvious to one of ordinary skill in the art to take the method disclosed by Frazier in view of IBA specification and modify it as indicated by Rooney such that it further comprises wherein selecting comprises selecting the subnet

manager to be included in the set of standby subnet managers by selecting the subnet manager from each of the plurality of nodes with a highest set of priority values. Using the highest values instead of the lowest values is a matter of design choice.

With respect to claim 5 and 14 and 33 and 42, Frazier teaches all the limitations of claims 3, 12, 31 and 40 respectively but does not explicitly disclose wherein selecting comprises selecting the subnet manager to be included in the set of standby subnet managers by selecting the subnet manager from each of the plurality of nodes with a lowest set of globally unique identifiers as Frazier instead uses the highest set of globally unique identifiers (Col. 10 lines 20-38).

Rooney demonstrates how one can either use a highest to lowest or lowest to highest selection in a priority selection scheme, as it is essentially a matter of design choice (Col. 16 lines 31-49).

It would have been obvious to one of ordinary skill in the art to take the method disclosed by Frazier in view of IBA specification and modify it as indicated by Rooney such that it further comprises wherein selecting comprises selecting the subnet manager to be included in the set of standby subnet managers by selecting the subnet manager from each of the plurality of nodes with a lowest set of globally unique identifiers. Using the lowest values instead of the highest values is a matter of design choice.

Claims 15-17, 20-23 and 25-27 rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,941,350 by Frazier et al. (Frazier).

With respect to claims 15, an InfiniBand architecture subnet, comprising:

a plurality of nodes (Col. 3 lines 13-43, Col. 4 lines 3-11 and Col. 8 lines 32-44), wherein each of the plurality of nodes has a priority value and a globally unique identifier (Col. 9 lines 17-30 and Col. 10 lines 20-38: priorities and globally unique identification - GUID);

a set of standby subnet managers (Col. 8 lines 38-44); and

a subnet manager for each of the plurality of nodes (Col. 8 lines 38-44), wherein the plurality of nodes are ranked according to the priority value and the globally unique identifier; and wherein, the subnet manager within each of the plurality of nodes is selected to be included in the set of standby subnet managers based on the priority value and the globally unique identifier of each of the plurality of nodes (Col. 10 lines 20-38 and Col. 11 lines 49-64: selection can use both priority and guid).

While Frazier teaches that there may be multiple subnet managers per subnet (Frazier: Col. 9 lines 51-65), Frazier does not explicitly disclose that a subnet manager is included within each of the plurality of nodes of the subnet. However, it is implied by Frazier's suggestion of having multiple subnet managers that any number of subnet managers may be used, including one for each of the plurality of the nodes in the subnet. Frazier's invention specifically provides support for multiple subnet managers (Frazier: Col. 10 lines 20-58). Because Frazier suggests multiple subnet managers can be used and provides a support for multiple subnet managers, it would have been obvious to one skilled in the art to substitute any number of subnet managers for the

subnet, including one for each of the plurality of nodes, for the predictable result of providing redundancy (See for example Col. 10 lines 7-19 of Frazier).

With respect to claim 16, Frazier teaches the limitations of claim 15 and further teaches wherein the subnet manager within each of the plurality of nodes is selected to be included in the set of standby subnet managers up to a limit value (Col. 12 lines 9-19).

With respect to claim 17, Frazier teaches the limitations of claim 15 and further teaches wherein the plurality of nodes comprise a first node and a second node, wherein each of the plurality of nodes is ranked from a highest priority value to a lowest priority value, and wherein if the priority value for the first node is identical to the priority value of the second node, the first node and the second node are further ranked from a lowest globally unique identifier to a highest globally unique identifier (Col. 10 lines 20-38).

With respect to claim 20, Frazier teaches the limitations of claim 15 and further teaches wherein the plurality of nodes comprise a first node and a second node, wherein each of the plurality of nodes is ranked from a lowest priority value to a highest priority value, and wherein if the priority value for the first node is identical to the priority value of the second node, the first node and the second node are further ranked from a highest globally unique identifier to a lowest globally unique identifier (Col. 10 lines 20-38).

With respect to claims 21, Frazier teaches the limitations of claim 20 and further teaches wherein the subnet manager is selected from each of the plurality of nodes with a lowest set of priority values (Col. 10 lines 20-38).

With respect to claims 22, Frazier teaches the limitations of claim 20 and further teaches wherein the subnet manager is selected from each of the plurality of nodes with a highest set of globally unique identifiers (Col. 10 lines 20-38).

With respect to claims 23, Frazier teaches the limitations of claim 15 and further teaches wherein the plurality of nodes comprise a first node and a second node, wherein each of the plurality of nodes is ranked from a highest priority value to a lowest priority value, and wherein if the priority value for the first node is identical to the priority value of the second node, the first node and the second node are further ranked from a highest globally unique identifier to a lowest globally unique identifier (Col. 10 lines 20-38).

With respect to claims 25, Frazier teaches the limitations of claim 23 and further teaches wherein the subnet manager is selected from each of the plurality of nodes with a highest set of globally unique identifiers (Col. 10 lines 20-38).

With respect to claims 26, Frazier teaches the limitations of claim 15 and further teaches wherein the plurality of nodes comprise a first node and a second node, wherein each of the plurality of nodes is ranked from a lowest priority value to a highest priority value, and wherein if the priority value for the first node is identical to the priority value of the second node, the first node and the second node are further ranked from a

lowest globally unique identifier to a highest globally unique identifier (Col. 10 lines 20-38).

With respect to claims 27, Frazier teaches the limitations of claim 26 andfurther teaches wherein the subnet manager is selected from each of the plurality of nodes with a lowest set of priority values (Col. 10 lines 20-38).

Claims 18, 19, 24 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Frazier as applied to claim 15 above and in further view of Rooney.

With respect to claims 18 and 24, Frazier teaches the limitations of claims 17 and 23 respectively but does not explicitly disclose wherein the subnet manager is selected from each of the plurality of nodes with a highest set of priority values as Frazier instead uses the lowest set of priority values (Col. 10 lines 20-38).

Rooney demonstrates how one can either use a highest to lowest or lowest to highest selection in a priority selection scheme, as it is essentially a matter of design choice (Col. 16 lines 31-49).

It would have been obvious to one of ordinary skill in the art to take the subbet disclosed by Frazier and modify it as indicated by Rooney such that it further comprises wherein the subnet manager is selected from each of the plurality of nodes with a highest set of priority values. Using the highest values instead of the lowest values is a matter of design choice.

With respect to claim 19 and 28, Frazier teaches the limitations of claims 17 and 26 respectively but does not explicitly disclose wherein the subnet manager is selected from each of the plurality of nodes with a lowest set of globally unique identifiers as Frazier instead uses the highest set of globally unique identifiers (Col. 10 lines 20-38).

Rooney demonstrates how one can either use a highest to lowest or lowest to highest selection in a priority selection scheme, as it is essentially a matter of design choice (Col. 16 lines 31-49).

It would have been obvious to one of ordinary skill in the art to take the method disclosed by Frazier and modify it as indicated by Rooney such that it further comprises wherein selecting comprises selecting the subnet manager to be included in the set of standby subnet managers by selecting the subnet manager from each of the plurality of nodes with a lowest set of globally unique identifiers. Using the lowest values instead of the highest values is a matter of design choice.

(10) Response to Argument

Argument A. 1

Appellant argues on page 7 of the appeal brief that Frazier fails to teach selecting a set of standby subnet managers based on the priority value and the globally unique identifiers of the nodes. Appellant states,

> *"Frazier, at best appears to disclose Frazier fails to teach or suggest this limitation. Frazier, at best, appears to disclose determining which of a set of subnet managers has the highest priority and making that subnet manager the active subnet manager. This differs substantially from forming a set of standby subnet managers based on the priority value and the globally unique identifier of each of the plurality of nodes. Appellants can find no mention in Frazier of selecting a set of standby subnet managers from all possible subnet managers based on the priority value and globally unique identifier of each node as claimed."*

Examiner's Response to Argument A.1:

In Frazier, Col. 10, lines 20-38, Frazier discloses "*The present invention provides a method, apparatus, and computer implemented instruments for supporting multiple subnet managers in a subnet and* ***specify how multiple subnet managers negotiate for one to become the master subnet manager.***" (emphasis added). The negotiation is further detailed in this section as first including a priority value. Particularly, Frazier states, "*the subnet managers negotiate based on a previously setup priority".* Frazier further characterizes the negotiation as including a globally unique identification (GUID). Particularly, Frazier states, "*if the priorities are the same, then the winner of the arbitration process is the one with the lowest globally unique identification (GUID).*"

Clearly there is disclosed in Frazier the use of a priority value and globally unique identifier for negotiating which node is the master subnet manager.

As noted in the advisory, 07/23/08, the nodes not selected to be the master subnet manager are set to a standby state (col. 11, lines 49-64). Thus a determination of a master node from a group active subnet managers is the creation of a set of standby subnet managers. Therefore the set of standby managers is created based on the negotiation for becoming the master subnet manager, i.e., based on the priority values and globally unique identifiers of each of the subnet managers as required by the claimed subject matter.

Argument A.2

Appellant argues on page 8 (and briefly noted on page 7 under argument A.1) of the appeal brief that Frazier fails to teach providing a subnet manager within each of the plurality of nodes in a subnet. Appellant states,

> *"Appellants respectfully disagree with the Examiner's assertion that Frazier's suggestion of having multiple subnet managers implies including one for each of the plurality of nodes in the subnet as claimed. Frazier teaches away from including a subnet manager in each of the plurality of nodes. The Frazier reference repeatedly discusses the "hundreds or thousands" of nodes that may be present in its disclosed SAN network. See, e.g., column 2, lines 1-3 and column 10, lines 13-15. Including "hundreds or thousands" of subnet managers in the complex negotiation that determines which acts as master, as described by Frazier, is impractical. Furthermore, Frazier explicitly teaches that including "too many" standby managers is undesirable. See, column 12, lines 19-20. Therefore,*

Frazier teaches away from providing a subnet manger for each of "hundreds or thousands" of nodes in a network, as provided for by the claims."

Examiner's response to Argument A.2:

The examiner disagrees with Appellants characterization of Frazier. While for example, Col. 10, lines 13-15 discloses hundreds or thousands of nodes, lines 15-18 of Col. 10 also states, "*These complex systems* ***typically include redundancies***" (emphasis added). Clearly if the systems of Frazier typically include redundancies, it would not be impractical and would in fact be reasonable to suggest that each node could be provided with a subnet manager for redundancy purposes as outlined in the rejection.

Furthermore, in column 12, lines 19-20, it is important to note the language of Frazier specifically states, "*A typical use of* ***shifting a standby subnet manager into the non-active state*** *S3 is when a master subnet manager determines that there are too many* ***active*** *standby managers*." (emphasis added). In other words, what is undesirable is having too many **active** standby managers, not too many standby managers (both active and non-active) in general. There is no indication that providing a subnet manager for each node in a subnet is undesirable as asserted by Appellant. In fact, such a citation is more suggestive that each node can actually have subnet manager as long as there is a mechanism to ensure that only a limited number are set as active at a given time. Such reasoning further ties back to the system including redundancies as discussed in Col. 10, lines 15-7, of Frazier.

Arguments B, C and D

For Arguments B, C and D, Appellant relies on the arguments and reasons discussed in Arguments A.1 and A.2. As such, the examiner relies on the responses to A.1 and A.2 above as the responses to Arguments B, C and D.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/David Lazaro/

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